

Focusing on graphene's thermal conductivity

Stock markets around the world are behaving sensibly and that includes our All Ordinaries in Australia. Is it not strange that our mining sector (excluding the leading producers) is so bereft of interest at present? Volumes are low and good news mostly falls on deaf ears. Is there a reason?

Fundamental analysis seems to play only a diminished role when it comes to the small to mid-size mining companies. The lack of any credible research means that market dynamics play a bigger role in the investment decisions in this end of the market; it is either game-on or game-off, with not much in between. When it is hot it is illogical, and when it is quiet, like now, it is just miserable. Still, it is always just a matter of time until it turns around.

Graphene's great thermal conductivity properties

i) 100% improve on concrete tensile strength

A number of universities have been working with concrete to see how it can be improved with the addition of graphene. There seems to be a consensus that the tensile strength of concrete can be improved by 100-150% with the addition of tiny amounts of graphene; 0.1% to 1% wt. It might be interesting to understand how this is possible.

When concrete cures over a period of approximately seven days, reactions occur that give off heat i.e. exothermic reactions. The resulting temperature gradient within the concrete can be very steep and this can result in extensive micro-cracks that only become worse over time. Adding graphene with its excellent thermal dispersion qualities addresses this problem, reducing the thermal gradient and avoiding the micro cracking. Voile.

ii) assists with efficiency of FireStop™

Looking at the video on the FGR website, showing how resistant to flame the FireStop product is, you will notice that there are circular patterns around where the tip of the flame is applied. This is because of the rapid dispersion of heat away from what would normally be the ignition point. It is so effective in this demonstration that the wood doesn't even ignite after five minutes of trying.

iii) is the basis of a new generation of coolants

Last week FGR announced an agreement to supply its graphene to **FlexeGRAPH**, a start-up company that claims to have the first breakthrough in liquid coolants for 90 years. Graphene is added to coolants to achieve 40-60% better heat dispersion. At this stage there is only a small amount of FGR graphene required, but if the tests prove effective, it is another potential source of demand that FGR is well positioned to supply.

FlexeGRAPH is targeting a market worth \$3bn in Australia alone, but much bigger globally. The main industries that need liquid coolants and the benefit offered include;

a) Car engine cooling

- i. enabling higher operating temperature

- ii. reduced fuel consumption and emissions
- iii. smaller radiators, pumps and fans
- b) EV battery cooling
 - i. reduced charging times
 - ii. extended battery lifetime
- c) HPC and data centre cooling
 - i. Reduced volume of cooling systems
- d) Drilling and cutting fluids
 - i. Improved tool performance and component quality

So far most of the work undertaken by FlexeGRAPH has been at laboratory scale with the assistance of computer simulation. The next phase of work will involve the building of real, working systems and later, commercial scale products.

As FlexeGRAPH is a start-up technology company, its shares are not listed on the ASX. Nevertheless, there is an opportunity to invest in this company at this early stage for patient investors who don't mind high risk/high reward investments. The company is raising several hundred thousand dollars at the moment via the issue of convertible notes that will convert to shares on an event-based timeline, perhaps in 2019. It is difficult to value this type of early stage company, but maybe it is worth \$2.5-\$4m based on expectations. If any readers have an inclination to invest in early stage start-up situations feel free to contact FEC.

Disclosure: Interests associated with the author own shares First Graphene and FEC has received capital raising fees. The author is chairman of FGR. FEC may earn fees from capital raisings by FlexeGRAPH.

Regulation of research shows a lack of understanding

Changing regulation on research is an ever expanding problem. Brokerage rates are so low that brokers can't fund research on trading income alone. They rely on corporate fees to subsidise research but that invariably leads to accusations of conflict of interest. ASIC is trying to stomp that out. The net result of changing market dynamics, and being regulated by a government body that shows no understanding of the market that it regulates, is that market failure sets in.

If firms that raise money for companies are not allowed to publish research on those companies, who is? What incentive is there for another firm to undertake the expense of funding research? If no-one is allowed to write it, or there is no incentive to provide it, then it won't get written. That means the market will be badly uninformed and there will be an information gap that will be filled by haphazard social media and internet commentary that is beyond the

jurisdiction of ASIC or the ASX. It will be based on opinions and perspectives rather than professional objectivity. It will increasingly turn the smaller end of the market into a crapshoot rather than a legitimate investment destination (though there has always been an element of gambling at this end, I'll admit).

I would not want to raise funds for a company that I haven't covered in research. It is both impolite and unreasonable to expect clients to take up a placement in shares in a company that hasn't been under some sort of coverage such that they have already undertaken some education. Similarly, once a raising has been completed, the clients would expect continuing research coverage as they want to be kept informed of how their vested interests are performing. It is professional obligation. Yet, ASIC seems to think it should not be done due to conflicts of interests. It assumes that conflicts of interest, which we see everyday, cannot be managed professionally. Well, the market has its own way of sorting the issue without having to resort to suffocating regulation.

There are suggestions that "independent" research should be commissioned, but the objectiveness of this fails the independence test when you look at who pays for it. If is the company under coverage, then it is automatically compromised. A company would never allow it to be released if it wasn't favourable.

If an investor commissions research it raises the question of who is allowed to see it. Can it stay private or does ASIC say it has to be released generally, in an attempt to socialise private intelligence? ASIC doesn't allow brokers to selectively release research to its best clients as it says it has to go to everyone simultaneously. That prevents brokers from rewarding its best clients and cuts a swathe through the client/broker bond that has been so valuable over time. That bond is what successful businesses are built upon. The world is too hung up on equality, in all walks of life. Equality is a fallacy. Markets work through taking advantage of inequalities.

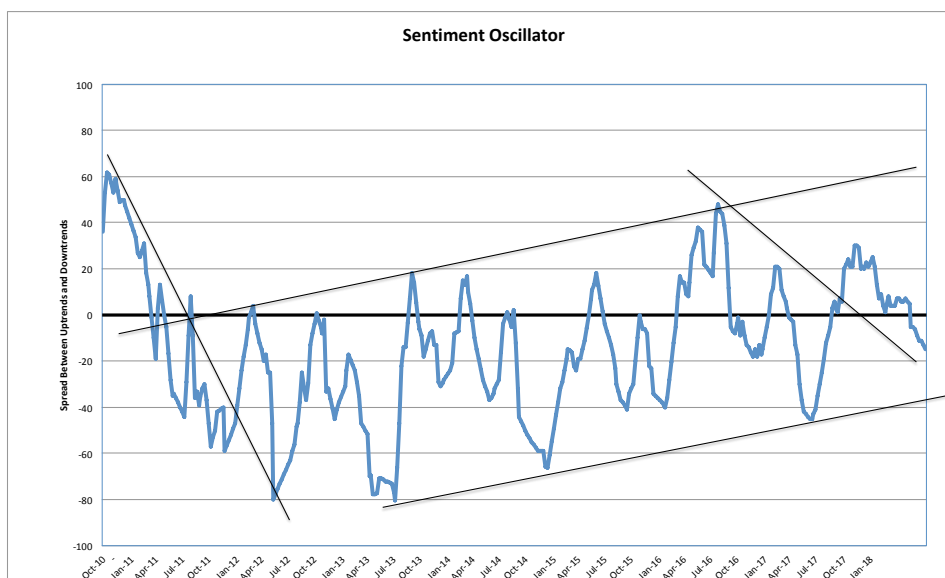
Golden Rim's latest placement is disappointing

Given that I have recently commented on the apparent value in Golden Rim, courtesy of its million ounce gold resource in Burkina Faso, I feel obliged to express my disappointment at its latest capital raising; a placement of shares and options at 2.6¢. There is nothing clever in knocking out shares at a 21% discount to the closing price, especially when you attach options. It is great for the broker and its clients, but not for most other parties.

Exploration companies need to fund their work program via the issues of shares, that is understood, but when companies go back to the market in quick succession at ever lower prices, it is a serious warning to shareholders. A cheap placement done through a broker lowers the bar and set up the placees to make quick trading profits, but it does nothing for loyal, longer term shareholders other than give them a haircut. It also shows a lack of strategic planning and an inability to work to strengthen the share register with loyal shareholders. It eventually leads to either a change of management, or a destruction of value in the company, depending upon how aggressive shareholders choose to be.

Prior to the placement, and even immediately after the placement done last February, the discount the market was giving the stock price was most evident. The market was telling us that even though the geology was good, it was a dog of a stock. So far the market has called this one correctly.

Disclosure: Interests associated with the author own shares in Golden Rim and have received capital raising fees.



Sentiment Indicator: Sentiment softened again last week; 28% (29%) of the charts were in uptrend and 43% (42%) in downtrend on Friday's close.